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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 08 26 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,185

Applicant(s)

ONO ET AL.

Examiner

Thoi V Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 7-21 and 44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 22-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species a and its relevant generic claims: claims 1-6, 22-36, 38 and 41-43 in Paper No. 5 is acknowledged.
2. Claims 37, 39 and 40 of Species b are also examined in this office action due to their obviousness over the cited prior arts.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 34 recites the limitation "the common electrodes" in line 10 of the claim.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 22, 24, 26 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Izumi (USPN 6,417,898 B1).

With respect to claims 22, 24, 26 and 28, as shown in Figs. 1 and 2, Izumi discloses a liquid crystal display device which includes first and second transparent substrates 1, 2 and a liquid crystal layer 4 which is sandwiched between the first and second substrates, wherein common electrodes 14 are provided to the second substrate, the first substrate includes a plurality of video signal lines 7, a plurality of scanning signal lines 6 and a plurality of pixel regions which are formed as regions surrounded by the video signal lines and the scanning signal lines, each pixel region includes at least one active element 8 and one pixel electrode 9, and color filter layers 10R, 10G, 10B are formed between the pixel electrodes and the liquid crystal layer,

wherein the color filters 10R, 10G, 10B are formed between the pixel electrodes 9 and the common electrodes 14, and a driving electric field for the liquid crystal layer is generated along a path which passes both of the liquid crystal layer and the color filter between the pixel electrode and the common electrode (Fig. 1);

wherein the pixel electrodes and the color filters are brought into contact with each other;

wherein a boundary of the color filters 10R, 10G, 10B of neighboring pixels in the extending direction of the scanning signal lines 6 is positioned on the video signal lines

7, and the neighboring color filters on the boundary portion are spaced apart from each other due to an insulating organic transparent film 11 (Figs. 1 and 2, and col. 5, line 2-7); and

wherein a boundary of the color filters 10R, 10G, 10B between neighboring pixels in the extending direction of the video signal lines 7 is positioned on the scanning signal line 6, and the neighboring color filters on the boundary portion are spaced apart from each other due to an insulating organic transparent film 11 (Figs 1 and 2, and col. 5, line 2-7).

7. Claims 34, 39, 40 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohta et al. (USPN 5,781,261).

As shown in Figs. 5 and 6, Ohta et al. discloses a liquid crystal display device comprising first and second transparent substrates 11 and 21 and a liquid crystal layer 30 which is sandwiched between the first and second substrates, wherein the first substrate includes a plurality of video signal lines 2, a plurality of scanning signal lines 1 and pixel regions which are formed as regions surrounded by respective neighboring video signal lines and scanning signal lines, and each pixel region includes at least one active element and one pixel electrode 3,

light shielding layers 5 and common electrodes 4 are laminated to the video signal lines by way of an insulation film 19, the light shielding layers are made of metal, and the common electrodes are made of a transparent conductive body (col. 2, lines 56-65),

wherein the pixel electrodes are formed in a comb shape and are formed below the insulating layer; and wherein the light shielding layers are also formed on the scanning signal lines (Fig. 6).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (USPN 6,445,432 B2).

As shown in Figs. 2, 3G and 8, Yamamoto et al. discloses a liquid crystal display device comprising first and second transparent substrates 1, 2 and a liquid crystal layer 20 which is sandwiched between the first and second substrates, wherein the first substrate includes a plurality of video signal lines 6a, a plurality of scanning signal lines 3a and a plurality of pixel regions which are formed as regions surrounded by the video signal lines and the scanning signal lines, each pixel region includes at least one active element TFT 8 and one pixel electrode 15, and color filters 10,11, 12 are formed on respective pixels on the first substrate 1 (Fig. 2),

wherein a boundary between the color filters 10-12 of pixels which are arranged close to each other in the extending direction of the scanning signal lines 3a is positioned on the video signal line 6a and, at the same time, a light shielding layer 13 is formed between the color filter and the liquid crystal layer such that the light shielding

layer 13 is superposed on the boundary portion and the video signal line 6a (Figs. 3G and 8 and col. 6, lines 10-52) so as to realize a stable contrast and obtain high total optical density for the display (col. 5, lines 57-64). Thus, with the teaching of Yamamoto et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Applicant's Prior Art (as preamble of claim 1) by forming the color layers under the light shielding layer to realize a stable contrast and obtain high total optical density for the display.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (USPN 6,445,432 B2) as applied to claim 1 above in view of Huang et al. (USPN 6,466,281 B1).

The LCD device of Applicant's Prior Art as modified in view of Yamamoto et al. above includes all that is recited in claim 2 except for an organic flattened film formed between the light shielding layer and the color filters. As shown in Fig. 2, Huang et al. discloses a liquid crystal display device comprising an organic flattened film 40 is formed between a light shielding layer 42 and color filters 58 to provide a planar topography for forming other structures and to cover the color filters. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further improve the liquid crystal device of Applicant's Prior Art with the teaching of Huang et al. by forming an organic flattened film formed between the light shielding layer and the color filters so as to prevent the contamination of impurities eluted from the color filters into the liquid crystal.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (USPN 6,445,432 B2) in view of Huang et al. (USPN 6,466,281 B1) as applied to claim 2 above and further in view of Ohta et al. (USPN 5,781,261).

The LCD device of Applicant's Prior Art as modified in view of Yamamoto et al. and Huang et al. above includes all that is recited in claim 4 except for common electrodes and common signal lines which also function as common electrodes being formed on the organic flattened film of the substrate on which the color filters are formed. As shown in Figs. 5 and 6, Ohta et al. discloses a liquid crystal display device comprising counter electrodes 4 formed on a passivation layer 19 so as to adopt an in-plane switching method, wherein an electric field which is approximately parallel to the substrate is applied between a pixel electrode 3 and a counter electrode 4 (col. 1, lines 7-15). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD device of Applicant's Prior Art with the teaching of Ohta et al. by forming common electrodes and common signal lines formed on the organic flattened film of the substrate on which the color filters are formed so as to adopt an in-plane switching method for the display.

12. Claims 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (USPN 6,445,432 B2) as applied to claim 1 above in view of Ohta et al. (USPN 5,781,261).

The LCD device of Applicant's Prior Art as modified in view of Yamamoto et al. above includes all that is basically the same as that recited in claims 3, 5 and 6 except for common electrodes and common signal lines formed between the color filters of the

substrate on which the color filters are formed and the liquid crystal layer, and the common signal lines also functioning as the light shielding layers. As shown in Figs. 5 and 6, Ohta et al. discloses a liquid crystal display device comprising counter electrodes 4 and light shielding layer 5 formed on a passivation layer 19 with the same material at the same processing step to obtain sufficient light shielding characteristics without increasing the number of processing steps (col. 8, line 66 through col. 9, line 2 and lines 22-27). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD device of Applicant's Prior Art with the teaching of Ohta et al. by forming common electrodes and common signal lines between the color filters of the substrate on which the color filters are formed and the liquid crystal layer, and the common signal lines also functioning as the light shielding layers so as to adopt an in-plane switching method and to obtain sufficient light shielding characteristics without increasing the number of processing steps.

13. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi (USPN 6,417,898 B1) as applied to claims 22, 24, 26 and 28 above in view of Ohta et al. (USPN 5,781,261).

Izumi discloses a liquid crystal display device that is basically the same as that recited in claim 23 except for common electrodes and common signal lines formed between the color filters of the substrate on which the color filters are formed and the liquid crystal layer, and the common signal lines also functioning as the light shielding layers. As shown in Figs. 5 and 6, Ohta et al. discloses a liquid crystal display device comprising counter electrodes 4 and light shielding layer 5 formed on a passivation

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layer 19 with the same material at the same processing step to obtain sufficient light shielding characteristics without increasing the number of processing steps (col. 8, line 66 through col. 9, line 2 and lines 22-27). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Izumi with the teaching of Ohta et al. by forming common electrodes and common signal lines between the color filters of the substrate on which the color filters are formed and the liquid crystal layer, and the common signal lines also functioning as the light shielding layers so as to adopt an in-plane switching method and to obtain sufficient light shielding characteristics without increasing the number of processing steps.

14. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi (USPN 6,417,898 B1) as applied to claims 22, 24, 26 and 28 above in view of Oruga et al. (USPN 6,271,902 B1).

Izumi discloses a liquid crystal display device that is basically the same as that recited in claim 25 except for the neighboring color filters superposed on the boundary portion, and an organic flattened film is formed on the color filters. As shown in Figs. 3A-3G and 4, Oruga et al. discloses a liquid crystal device wherein color filters 17, 19, 21 are formed to be overlapped at the edge portions so as to improve the surface smoothness of an organic flattened film 5 which is applied to cover the color filters 17, 19 and 21 (col. 11, lines 56-67 and col. 13, lines 18-20). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Izumi with the teaching of Oruga et al. by forming the

neighboring color filters to be superposed on the boundary portion to improve the surface smoothness of the organic flattened film which is formed to cover the color filters.

15. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi (USPN 6,417,898 B1) as applied to claims 22, 24, 26 and 28 above in view of Huang et al. (USPN 6,466,281 B1).

Izumi discloses a liquid crystal display device that is basically the same as that recited in claim 29 except for an organic flattened film formed between the light shielding layer and the color filters. As shown in Fig. 2, Huang et al. discloses a liquid crystal display device comprising an organic flattened film 40 is formed between a light shielding layer 42 and color filters 58 to provide a planar topography for forming other structures and to cover the color filters. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to improve the liquid crystal device of Izumi with the teaching of Huang et al. by forming an organic flattened film formed between the light shielding layer and the color filters so as to prevent the contamination of impurities eluted from the color filters into the liquid crystal.

16. Claims 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi (USPN 6,417,898 B1) as applied to claims 22, 24, 26 and 28 above in view of Kikkawa et al. (USPN 6,330,043 B1).

Izumi discloses a liquid crystal display device that is basically the same as that recited in claims 27 and 33 except for an inorganic insulation film formed between the active elements and the color filters. As shown in Fig. 8, Kikkawa et al. discloses a liquid

crystal display device comprising an inorganic insulation film 17 formed between semiconductor layer 15 and color filters 19 to prevent malfunction of the TFT due to contamination of impurities such as an ion into the semiconductor layer (col. 5, lines 40-44; col. 6, lines 5-7; and col. 7, lines 13-18). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Izumi with the teaching of Kikkawa et al. by forming an inorganic insulation film formed between the active elements and the color filters to prevent the impurities such as ion from color filters eluted into the active elements.

17. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi (USPN 6,417,898 B1) as applied to claims 22, 24, 26 and 28 above in view of Matsumoto et al. (USPN 6,414,732 B1).

Izumi discloses a liquid crystal display device that is basically the same as that recited in claims 30-32 except for the color filters having conductivity. As shown in Fig. 1, Matsumoto et al. discloses color filters 13 formed to be electrical conductive for driving liquid crystal device, comprising a transparent resin material 14 which has to have a resistivity large enough to prevent a short circuit between the color filters; the resistivity may be 10×10^9 through 10×10^{13} ohm-cm (col. 1, line 59 through col. 2, line 2 and col. 4, lines 14-50). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Izumi with the teaching of Matsumoto et al. by forming conductive color filters for driving liquid crystal device.

18. Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (USPN 5,781,261) as applied to claims 34, 39, 40 and 43 above in view of Kim et al. (USPN 5,850,271).

Ohta et al. discloses a liquid crystal display device that is basically the same as that recited in claims 35-38 except for the relative positions of the common electrodes with respect to the light shielding layers. As shown in Figs. 2, 4 and 5, Kim et al. discloses a color filter substrate comprising common electrodes 4 laminated to lower layers of light shielding layers 5 (Fig. 2) or to upper layers of the light shielding layers (Figs. 4 and 5) at the boundary portions of color filters 2 in order to reduce sheet resistance of the common electrodes and eliminate crosstalk without additional process due to the electrical connection between the common electrodes and the light shielding layers (col. 2, lines 7-65). Accordingly to those figures, the common electrodes have a width wider than a width of the light shielding layers. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Ohta et al. with the teaching of Kim et al. by laminating the common electrodes to upper layers or lower layers of the light shielding layers so as to prevent a picture quality from deteriorating due to crosstalk.

19. Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (USPN 5,781,261) as applied to claims 34, 39, 40 and 43 above in view of Izumi (USPN 6,417,898 B1).

Ohta et al. discloses a liquid crystal display device that is basically the same as at recited in claims 41 and 42 except for the insulation films formed of color filters. As

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shown in Figs. 1 and 2, Izumi discloses a liquid crystal display device wherein of color filters 10R, 10B, 10G are disposed on pixel electrodes 9 and an organic insulation film 11 is formed to cover scanning lines 6, video lines 7 and TFTs 8 so as to provide a large-area liquid crystal display device at a low price since a new color filter production line for an opposing substrate is not required ((col. 2, lines 46-52). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Ohta et al. with the teaching of Izumi by forming the insulation films of color filters so as to obtain a display with a smaller thickness at a low price.

Conclusion


20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong



08/08/2003


JAMES DUDEN
PRIMARY EXAMINER